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THE UNIVERSITY OF ALBERTA

PERSONALITY INVENTORY FOR CHILDREN AND READING DIFFICULTIES

BY

MARILYN L.J. FORSTER

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTERS OF EDUCATION

IN

COUNSELLING PSYCHOLOGY

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

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FALL 1986

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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled Personality Inventory for Children and Reading Difficulties submitted by Marilyn L.J. Forster in partial fulfillment of the requirements for the degree of Masters of Education.

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Date: June 18, 1986

ABSTRACT

The purpose of this study was to determine whether or not children with reading difficulties differ from "normal" children in personality variables as measured by the Personality Inventory for Children, PIC.

Mothers of 51 fourth through sixth grade boys and girls, 21 of whom were identified as reading delayed and 30 comparison children reading at or above grade level, completed the PIC parts I to IV.

The groups were found to differ most on those narrow band scales reflecting mother's perceptions of academic achievement, and intellectual and general development, however differences in varying degrees of significance were seen across all of the broad band factor scales, Externalizing Behavior, Internalizing Behavior, Social Incompetence and Cognitive Development, one validity scale, Infrequent Respones, and three of the narrow band clinical scales, Family Relations, Delinquency and Social Skills.

For the screening scales Adjustment and the fourth broad band factor scale Cognitive Development, a clinical cut off point of T-score 60 or one standard deviation above the mean was found to provide screening for high risk children in this population.

For the "normal" subjects in this study the norms provided by the authors were in the same range. All mean scale T-scores for the comparison group fell between 45 and 55 suggesting no significant differences between these

scores and existing norms.

It was suggested that PIC results should assist us in understanding delayed readers and thus in planning appropriate interventions for students.

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CHAPTER I

Introduction

The identification and assessment of children with special needs is a persistent and major concern to the educational system. School boards within the province of Alberta are mandated under the School Act, 1981, section 145, to accept all students of appropriate age to an educational program. The provision of appropriate educational services for each child then becomes the task of school boards, administrators, specialists and teachers.

In order to provide these services school psychologists and counsellors are routinely called upon to assess children's unique educational needs so as to assist with program planning. Accurate and early assessment of children experiencing academically related difficulties is important for the implementation of appropriate programming. As Bergan and Tombari (1976) have pointed out, the psychologist's success in proposing solutions to children's problems and having them implemented is largely dependent upon the initial stage of problem identification. Failure to do so may compound the child's difficulties. Researchers have shown that difficulties in learning can be causally linked to both cognitive and emotional factors (Heinicke, 1972) and that delaying interventions may serve to aggravate any interaction between these factors (Connolly, 1971).

The interaction of reading difficulties and emotional factors is acknowledged by a number of writers (Johnson,

1985; Ungerleider, 1985; Porter, 1980; Empacher, 1977; Stevens, 1971). While studies show no single personality structure characteristic of disabled readers, the need to take each individual's specific emotional needs into account when planning for successful remediation programs has been documented (Williamson, 1979; Murray, 1978).

While there are a number of psychometrically sound measures for evaluating cognitive abilities, personality assessment generally involves the use of less reliable and valid projective instruments (Anastasi, 1976). Reviewers of projective tests (Anastasi, 1982 Gdowski, 1977; Gittelman, 1980; O'Leary and Johnson, 1979) have concluded that research results consistently indicate projectives to be nearly useless in the differential diagnostic process. They may be able to discriminate between groups on a very gross level and may be helpful in predicting very specific behavior patterns but there is no evidence that they are as effective as other methods such as direct behavior observation or objective testing. Further, they are very costly in terms of administration, scoring, and interpretation time (Anastasi, 1982; O'Leary and Johnson, 1979). One reviewer concludes that at best they can be considered "clinical tools" and used as supplementary and qualitative interviews by the skilled psychologist (Anastasi, 1982).

The purpose of personality tests is to classify, predict, and better understand the behavior of subjects so as to assist with planning appropriate interventions. Objec-

tive personality testing of children has gained popularity in the last few years because of its demonstrated efficacy in this respect. Writers (Graham and Lilly, 1984) have indicated that the Personality Inventory for Children (PIC) provides an objective means by which personality characteristics as well as cognitive and academically related abilities may be assessed (Wirt, Lachar, Klindedinst and Seat, 1977, revised 1984).

The purpose of this study is to determine whether or not children who have demonstrated a significant level of difficulty in reading achievement differ from "normal" children in personality variables as measured by the Personality Inventory for Children.

Studies examining the PIC have shown substantial support for the educational diagnostic potential and the basic interpretive intent of the scales (Culbert and Gdowski, 1982; Clark, 1982; De Krey, 1982; Porter, 1980). The need to assess the presence or absence of emotional factors contributing to educational handicaps requires such an instrument. The specific questions to be addressed in this study are as follows:

1. Is there a significant difference in the PIC profiles of subjects experiencing reading difficulties as compared to children who are reading at grade level or above?

2. If so, on what scales do these students differ?

3. Which of the PIC scales best differentiate students

experiencing reading difficulties from comparison children?

Supplementary questions to be asked:

1. Since the published norms of the PIC were collected between 1958 and 1962 primarily from one geographical area, are the PIC norms provided by the authors in the same range as the scores of "normal" Alberta students?

2. To what degree can the initial screening measure (adjustment scale) of the PIC be counted on to screen out students requiring further assessment?

3. To what extent can the fourth broad band factor scale (Cognitive Development) be counted on to identify children with reading problems?

CHAPTER II

Review of the Literature

The literature review is divided into five sections. Articles and studies which document the need for examining personality factors in children who are experiencing reading difficulties are presented first. Secondly, the Personality Inventory for Children PIC scale development and description are presented. Next, studies which have investigated the reliability of the PIC are described. Fourthly, studies which have provided support for the validity of the PIC are reviewed and finally, in light of the questions posed in this study, studies using and examining PIC validity in the school setting are presented.

Reading Difficulty and Personality Factors

Ungerleider (1985) in a paper presented at the International Conference of the Association for Children and Adults with Learning Disabilities in San Francisco described the experiences of an individual working with illiterate delinquents. It was suggested that "controlled rage" is concomitant to reading failure and is a potential source of school difficulty as well as social violence. The case of a ninth-grader with reading problems whose IQ had steadily decreased with age was cited. The school's unsuccessful efforts with the student, his family's frustrations, and his own deep humiliation at being unable to read were examined. Suggestions were made for teachers to combat remediation failure which included acknowledging the emotional needs of

the student.

Johnson (1985) examined the psychological and social determinants of reading failure through three case studies of adult males. He found reading disabilities to be affected by anxiety maladaptive strategies, conflicting motives, and inappropriate causal attributions unlike theories that focus on neurological or processing deficit explanations.

Empacher (1977) presented an analysis of the problems of an illiterate woman who learned to read as an adult. It was concluded that the oral history demonstrated how an intelligent person can be beaten down to accepting a position out of the mainstream of society as well as showing the psychological impact of reading disability.

Murray (1978) measured several personality factors or traits, namely self-concept, achievement motivation, general manifest anxiety, test anxiety, and behavior deviance in dyslexic and normal children. Dyslexic children showed poorer personality adjustment; also those dyslexic children who were successful in remedial training showed better emotional adjustment than those children who continued to fail.

A study by Stevens (1971) where the attitudes of 886 fourth graders were measured found that remedial readers - those 34 children in the study requiring small group reading remediation - were not so socially well-accepted as their classroom peers and further that remedial readers rated themselves low on social acceptance in relation to their

classroom peers.

PIC Development and Description

The Personality Inventory for Children is an objective, multidimensional personality inventory which seeks to provide comprehensive and clinically relevant descriptions of children and adolescent personalities. The 600 item inventory is divided into 12 clinical scales, namely: achievement, intellectual screening, development, somatic concern, depression, family relations, delinquency, withdrawal, anxiety, psychosis, hyperactivity, and social skills. Validity scales assess the respondent's tendency to underreport or exaggerate child behavioral symptoms or to respond randomly. The factor scales assess broad dimensions of child psychopathology including externalizing behavior, internalizing behavior, social incompetence, and cognitive dysfunction.

The adjustment scale is designed as a screen for any type of psychopathology. The inventory may also be scored on 17 experimental scales. A list of all scales and their abbreviations is presented in Appendix A.

The inventory is completed by a secondary respondent, generally the mother. The informant's perceptions of the child under study are intended to aid in the diagnosis and treatment of the child, as well as the early identification of developing patterns of problem behavior. Wirt and Broen (1958) chose to develop an instrument which used parents as respondents since the child's level of self-awareness,

motivation and/or cognitive abilities for reading and conceptual understanding may preclude a valid self-report assessment. Later research (Novik, Rosenfeld, Block and Dawson, 1966) supported the use of a parent report by demonstrating the validity of the responses and the lack of confounding bias.

Wirt and Broen (1958) based the content of the initial 600 items on the work of Patterson (1956). Patterson had developed 11 content areas, namely: withdrawal, excitement, reality distortion, aggression, somatic concern, anxiety, social skills, family relations, physical development, intellectual development, and asocial behavior. 50 items were selected from each of these areas with an additional 50 items developed to improve sampling in several areas. The resulting 600 item pool contained content which relied heavily on typical psychiatric intake interview questions.

The 600 item inventory with 11 content areas was normed during a four year period from 1958 to 1962. The norm group was comprised of 2,390 children selected from schools of non-psychiatric institutions in the Minneapolis-St. Paul area. Each one year age level from 5-1/2 to 16-1/2 years included 100 males and 100 females.

Personality dimensions and inventory items were selected on the basis of empirical and rational methodologies (Wirt, Lachar, Klinedinst, and Seat, 1977, Revised 1984). The empirical scale development was based on the use of appropriate criterion groups and normal contrast

subjects. Items were presented to criterion and normal groups. Those items which differentiated between the two were then included. In addition, the Darlington and Bishop (1966) method of scale construction was used to obtain optimum scale validity. This was accomplished by making possible the use of all items in the item pool and adding new items according to interaction validity comparisons. The empirically derived scales consist of two validity scales (F and Defensiveness), one screening scale (Adjustment), and five clinical scales (Achievement, Intellectual Screening, Delinquency, Psychosis, and Hyperactivity).

The rational scales were constructed using content-oriented and internal consistency methods. Twelve experienced judges nominated items from the PIC item pool, with each judge choosing items for three scales. The criteria for item inclusion were that the item had to be selected by three-quarters of the judges as measuring the content of the specific scale and the item had to be keyed in the same direction by at least two-thirds or three-quarters of the judges. The rationally derived scales consist of one validity (Lie) and seven clinical scales (Development, Somatic Concern, Depression, Family Relations, Withdrawal, Anxiety, and Social Skills).

The 1984 revised PIC manual describes the 1981 revision of the inventory format. The revised PIC booklet is divided into four parts. Part I includes four factor scales which were derived from a factor analysis of 1,226 completed

profiles. In addition, the Lie Scale is included in Part I which includes a total of 131 of the original items. Part II of the revised booklet includes shortened versions of 11 of the original 12 profile scales. The Development scale is also included in its entirety. Part II adds an additional 149 items. Parts III and IV contain the remaining 320 items which allow scoring of the full length and experimental scales. Wirt, Lachar, Klinedinst and Seat (1984) have pointed out that the experimental scales have been shown to be less psychometrically sound than are the Factor, Validity and Clinical scales and require further research.

For a description of the PIC experimental scales, the PIC manual should be consulted (Wirt, Lachar, Klinedinst and Seat, 1984). The profile scales are briefly described below.

Factor Scales

Factor I: Undisciplined/Poor Self-control - The major content dimension of this 30 item scale reflects ineffective discipline, with less robust dimensions reflecting impulsivity, problematic anger, poor peer relationships, limited conscience development, and poor school behavior (Lachar, 1984).

Factor II: Social Incompetence - This 30 item scale mainly reflects sad affect, with other dimensions tapping shyness, peer rejection, lack of leadership qualities, social isolation, lack of friends, and poor general adjustment (Lachar, 1984).

Factor III: Internalization/Somatic Symptoms - The

major content dimension of this 31 item scale reflects worry and a poor self-concept. Secondary item clusters reflect content dimensions of somatization, crying spells, insecurity/fearfulness, vision problems, psychotic behavior, and body temperature (Lachar, 1984).

Factor IV: Cognitive Development - The major dimension extracted from Scale IV, consisting of 25 items, was labeled adaptive behavior. Other item clusters reflect content areas such as deficient pragmatic skills, academic skills, lack of special abilities, psychotic behavior, poor motor co-ordination and developmental delay (Lachar, 1984).

Validity Scales

Lie (L) - This 15 item scale is intended to identify an informant's tendency to deny commonly occurring childhood problems and ascribe the most virtuous behaviors to the child (Seat and Wirt, 1973).

F (F) - This 42 item scale was developed to target deviant response sets such as exaggeration of symptoms or randomness in responding (Seat, 1971).

Defensiveness (DEF) - This 23 item scale was written to determine a respondent's tendency to be defensive about the designated child's behavior. Interscale correlates suggest that the DEF scale is negatively related to the informant's expressing negative attributes, particularly those that are interpersonal (Myers, 1974).

Screening Scales

Adjustment (ADJ) - This 76 item scale was constructed

as a screening device to identify general adjustment problems and serve as an indicator of those children in need of further psychological assessment (Seat, 1969).

Clinical Scales

Achievement (ACH) - This 31 item scale was designed to identify children who are significantly below age expectancy in their academic achievement, regardless of their potential to achieve at an age-appropriate level (Lachar, 1974).

Intellectual Screening (IS) - This 35 item scale is intended to identify a child with impaired intellectual functioning and in need of further evaluation (Froman, 1973).

Development (DVL) - This 25 item scale is designed to identify weaknesses in intellectual and physical development which may be reflected in poor classroom performance (Klinedinst, 1972, 1975).

Somatic Concern (SOM) - This 40 item scale is intended to identify reoccurring concern with physical symptom atology (Klinedinst, 1972, 1975).

Depression (D) - This 46 item scale reflects childhood depression and measures its importance as a component of psychological disturbance (Froman, 1971).

Family Relations (FAM) - This 35 item scale measures family effectiveness and cohesion (Klinedinst, 1972, 1975).

Delinquency (DLQ) - This 47 item scale is intended to measure tendencies toward delinquent behavior (Lachar, Abato, and Wirt, 1975).

Withdrawal (WDL) - This 25 item scale is designed to identify children who are withdrawn from social interactions (Klinedinst, 1972, 1975).

Anxiety (ANX) - This 30 item scale was developed to measure symptoms of anxiety, including a low threshold for frustration, exaggeration of problems, irrational fears and worries, nightmares and behavioral as well as psychological correlates of anxiety (Klinedinst, 1972, 1975).

Psychosis (PSY) - This 40 item scale was constructed to discriminate psychotic children from normal, behaviorally disturbed, nonpsychotic and retarded children (Lachar, 1971).

Hyperactivity (HPR) - This 36 item scale is intended to identify children whose behaviors are frequently associated with the "hyperkinetic syndrome" (Hegeman, 1976).

Social Skills (SSK) - This 30 item scale is designed to reflect an effectiveness in social relationships and the reasons for a lack of successful interaction (Klinedinst, 1972, 1975).

Reliability Studies of the PIC

Wirt, Lachar, Klinedinst and Seat (1984) have documented the reliability of the PIC within clinical and normal populations. Test-retest reliability was estimated in a clinical population by having mothers of 34 children being evaluated at Lafayette Clinic's outpatient services complete the PIC on two separate occasions. The time interval between the test administrations was between 4 and 72 days ($\bar{X}$ =

15.2). The clinical sample included 22 males and 12 females ranging in age from 5.2 to 14.7 years (X = 9.7). The correlations between the two administrations yielded an average reliability coefficient of .86 for the 16 profile scales and an average of .89 for the clinical scales only.

Two reliability studies, one in the Detroit area and the other in Pennsylvania, were conducted to obtain estimates of scale reliability in normal populations. The Michigan study involved 46 mothers who on two separate occasions completed the PIC on their children. The sample consisted of 25 males and 21 females between the ages of 4.4 and 16.11 (X = 9.4). The testing interval was between 13 and 102 days (X = 50.9). The average test-retest reliability coefficient for the profile scales was .71.

The Pennsylvania study consisted of a sample of 55 children, 34 males and 21 females. The age range was between 5 and 11 (X = 7.9). There was a two week interval between test administrations. The average reliability coefficient for the profile scales was .89.

These studies suggest that the PIC profile scales demonstrate sufficient stability across time to allow for the inventory's use in individual assessment. The lower reliability coefficient obtained in the Michigan study of nonpatients may be attributed to the extended test-retest interval, just as the higher correlations found in the Pennsylvania study may reflect a shorter time interval. Another factor which may have contributed to the higher

correlations between tests in the Pennsylvania study was the procedure of data collection, which did not ensure that the informants would not refer to the inventory which they had first completed while responding to the inventory for a second time.

Coefficient alpha estimates of internal consistency were computed based on a heterogeneous clinic sample (N = 1,226). Internal consistency estimates showed a mean alpha of .74. The only scale for which internal consistency reliability was extremely low was Defensiveness. This may reflect, in part, the situationally dependent nature of this scale.

Validation Studies

Lachar, Butkus, and Kryhorczuk (1978) investigated the diagnostic potential of the PIC in a child psychiatric setting by determining external correlates of the profile scales. Mothers of 79 children (55 males, 24 females) who had received outpatient evaluation at the Lafayette Clinic in Detroit completed PICs. The average age of the children was 9 years, 8 months.

The sample consisted of children with varied symptomatology including primary diagnoses of hyperkinetic reaction unsocialized, aggressive reaction; specific learning disturbance; depressive neurosis; adjustment reaction; over-anxious reaction; mental retardation/organic brain syndrome; withdrawing reaction; seizure disorder; and those with no psychiatric illness. No psychotic children

were included.

A correlation of checklist items from psychiatric physicians with PIC clinical scales resulted in an average of 12 correlates for each of the 16 scales. The following PIC correlates were found to be the most robust: "At least one year of achievement delay" with Achievement; "below average intellectual functioning with Intellectual Screening; "at least one year of achievement delay and below average intellectual functioning" with Development; "places blame on others" with Somatic Concern; "few or no friends, complaints of peer hostility and discrimination, and fights with siblings "with Depression; "father as strict disciplinarian, uses excessive physical punishment, is alcoholic or substance abuser, and is emotionally disturbed" with Family Relations; "places blame on others and disobeys parents" with Delinquency; "unrealistic fears and has few friends" with Withdrawal; "manifests anxious, tense, nervous, and restless behaviors" with Anxiety; "seldom communicates" with Psychosis; "prior stimulant therapy, overly active or agitated" with Hyperactivity; and "suicidal thought and/or self destructive behaviors and has few friends" with Social Skills. According to the authors, "These results suggest the PIC to be a valid instrument which, due to its efficiency, should enjoy expanded application."

Lachar and Gdowski (1979) expanded on the earlier study discussed above (Lachar, Butkus and Hrychorczuk, 1978) by studying a larger sample of 430 children ranging in age from

2 to 17 years. The adjective checklist was expanded to include 100 items to be rated after integrating the results of parent and teacher questionnaires, interviews with parents and children, and medical chart data. The results of the ratings were independent of the PIC administration and were made by psychiatric resident physicians. A factor analysis of checklist items resulted in 16 interpretable factors which accounted for 78.5 percent of the common variance. These factors were correlated with the 12 clinical scales of the PIC. The results are reported to establish evidence of convergent and discriminant validity of the PIC scales. Discriminant validity was shown as the author found that higher scores on scales reflecting externalizing, aggressive behaviors (DLQ and HPR) were clearly not related to factors on the problem checklist which represented symptomatology of internalizing behavior (anxiety) depression, suicide intent, and fearfulness. Convergent validity was demonstrated by the high correlations of the internalizing scales (D and ANX) with factors representative of internalizing symptomatology (sleep disturbance and social withdrawal).

Gdowski (1977) studied the ability of the PIC scales to discriminate among relatively homogeneous groups of disturbed children. The 307 subjects (190 males, 117 females) ranged in age from 2.6 to 17.11 years ($\bar{X}$ = 12.5) and had been referred to the Lafayette Clinic in Detroit. Psychiatric residents were asked to evaluate each subject on

a 65 item problem behavior checklist. PICs were completed for all subjects. The subjects were grouped into eight homogeneous subgroups based on patterns of disturbed behavior following factor analysis of the checklist. To determine whether or not the PIC was sensitive to the symptom patterns an analysis of variance was used to compare the cluster groups with PIC profile scale scores. Post hoc comparisons allowed for the examination of cluster mean differences on the individual PIC scales. With the exception of the SOM scale, all clinical scales of the PIC differed significantly across the cluster groups. The validity scales (L, F, and DEF) and the screening scale (ADJ) did not vary significantly across groups. The results indicate that the PIC scales were sensitive to varied patterns of symptoms in a clinic population and were able to differentiate relatively homogeneous groups of behaviorally disturbed children and adolescents.

Anderson and Quast (1983) administered the PIC to 50 children ages 6 through 12 years of alcoholic families currently involved in treatment for alcoholism. Significantly deviant scores from PIC norms were found on the Adjustment, Family Relations and Anxiety scales.

Leon, Kendall, and Garber (1980) utilized the PIC Depression Scale to differentiate between groups of depressed and non-depressed children. They found the PIC to be sensitive to and consistent with external observations of depression in childhood.

Studies Using and Examining PIC Validity in the School Setting

Porter (1980) investigated whether or not learning disabled children constituted a heterogeneous population with regards to personality functioning. Factor analytic techniques applied to PIC scale scores were employed to identify subtypes of learning disabled children. Based on his study of 100 children between 6 and 16 years of age there appear to be four subtypes of learning disabled children that differ from each other in terms of personality functioning. The largest subtype tends to demonstrate quite adequate social-emotional functioning. The other three subtypes seem to be characterized by i) marked psychological disturbance reflected by internalized social-emotional difficulties; ii) externalized behavioral disturbance reflected by over-activity, distractibility, interpersonal insensitivity, and antisocial behavior; and iii) a disproportionate pervasiveness and/or intensity of somatic concerns, accompanied by otherwise adequate personality functioning.

DeKrey and Ehly (1980) utilized the PIC to assess the validity of the clinical scales to differentiate between three special education classifications. They found that many profile scales appeared highly effective in dividing the criterion groups of special education students from the normal sample and from each other.

Harrington and Marks (1985) administered the Adjustment

scale of the PIC to parents of 35 first through 6th grade boys and girls enrolled in either regular education or special education classes for learning disabled children and children with social adjustment problems. Results showed the standard T scores on the ADJ scale for the behaviorally disordered group were significantly elevated compared to the learning disabled and regular education groups. There was no significant difference between the adjustment scores for the learning disabled and regular education groups. Results suggest the potential usefulness of the ADJ scale of the PIC as a screening instrument to identify children who may be behaviorally disordered and in need of a comprehensive psychological evaluation.

DeKrey (1982) found that the shortened version of the PIC also has the ability to discriminate between educational groups. The subjects were 95 elementary males selected from one of the following four educational classifications: 32 from regular education classes, 23 from learning disabled classes, 20 from educable mentally disabled classes and 20 from emotionally disabled classes. The three special education classifications had been previously assigned in accordance with criteria established by the Department of Public Instruction - Special Education Division. The responses obtained from female caretakers on the revised format version of the PIC (Parts I and II) included 280 items. A univariate analysis revealed 18 of the 20 PIC-R variables to vary significantly between the groups.

The results of a discriminant analysis identified three distinct functions. Function 1 accounted for 52 percent of the variance existing in the 20 PIC-R variables. Group scores on this function revealed considerable discrimination. Function 1 can be described as a general school maladaption measure. With the addition of functions 2 and 3 an overall correct classification rate of 90 percent was achieved.

Clark (1982) investigated the ability of the Personality Inventory for Children PIC to discriminate cognitive and personality patterns among 141 learning disabled, emotionally disturbed, and educable mentally retarded children, ages 6 to 16. In addition, the construct validity of the PIC was studied by examining the relationships among the PIC profile scales and independently derived measures of intellectual functioning and behavioral adjustment.

Profile analysis resulted in the significant discrimination among the three group's profiles. The findings suggested that educationally handicapped children can be differentiated along salient intellectual and personality dimensions as measured by the PIC. Analysis of variance showed that relative to a combined group of learning disabled and emotionally disturbed children, the educable mentally retarded children had significantly higher scores, indicating greater impairment on the Lie, Intellectual Screening Achievement, Development, Psychosis,

and Withdrawal scales, and significantly lower scores on the Hyperactivity scale. The emotionally disturbed children, compared to the learning disabled, had significantly higher scores on the Adjustment, Delinquency, Anxiety, and Social Skills scales, and significantly lower scores on the Lie and Defensiveness scales.

Examination of the scale correlates provided substantial support for the convergent and discriminant validation of the PIC profile scales. The correlation among the PIC profile scales and the Wechsler Intelligence Scale for Children - Revised and the Teacher Rating and School Information checklist showed that the profile scales are related to variations in the intellectual abilities and classroom behavior of children diagnosed as learning disabled, emotionally disturbed and educable mentally retarded. The majority of significant correlations clustered around scales which discriminated among the 3 groups and identified cognitive deficits (Intellectual Screening, Development) and disruptive, acting out behaviors (Adjustment, Hyperactivity).

Culbert and Gdowski (1982) sought to determine whether or not the PIC scales could effectively differentiate between a reading-disabled group of children and a normal comparison group, as well as to assess whether or not the scales were sensitive to variations in cognitive abilities.

The reading-disabled group consisted of 12 males aged 8 and 9 years, who had been identified dyslexic, as defined by

the World Federation of Neurology. The comparison group of 12 males were from the same area, namely Metropolitan Detroit, and were matched to the dyslexics according to the Peabody Picture Vocabulary Test IQ (PPVT), SES, age, race, and handedness. Subjects were excluded if interviews revealed information suggesting a history of medical, neurological, or emotional problems that could interfere with the development of reading skills.

One father and 23 mothers completed the PICs, and each child was administered the Weschler Intelligence Scale for Children - Revised (WISC-R). The results showed that the reading disabled group had higher PIC scale elevations on ADJ, ACH, IS and DVL. Correlation of PIC scales and WISC-R subtest scores and Verbal, Performance, and Full Scale IQs revealed significant relationships that clustered around the ADJ, ACH, IS and DVL scales. The authors concluded that the data reflected the ability of the PIC to discriminate the two groups according to cognitive and academic dimensions and that the 3 scales constructed to identify cognitive and academically-related skills are related to variations in academic achievement by children of average intelligence.

Summary of the Research

To summarize, in the literature presented the interaction of reading difficulties and emotional factors has been acknowledged and thus the need for valid personality assessment of children experiencing such problems if we are to plan successful remediation programs.

The Personality Inventory for Children is probably as sophisticated and psychometrically sound an instrument as is available (Graham and Lilly, 1984). The published validity evidence for the PIC confirms its application in the assessment of children in both the clinical and school setting.

CHAPTER III

Method

This chapter documents the procedures used to conduct this study. The Personality Inventory for Children PIC will be briefly described followed by a listing of the hypotheses under investigation. Finally the method of data analysis will be presented.

Procedures

The mothers of one hundred fourth through sixth grade boys and girls enrolled in County of Parkland schools were invited to participate in the study on a voluntary basis. Fifty children who had seen a reading specialist for an individual diagnostic assessment over the past year were selected and compared to a second group of fifty students. The comparison group was matched in that for example if two study children came from school A in grade five then two children from that school and grade who were reading at or above grade level were randomly selected.

The invitation was mailed to selected households along with a PIC questionnaire, answer sheet and return envelope. Please see appendix B for details. All returned inventories were hand scored on the 20 PIC scales. Raw scores were converted to T-scores, which during the conversion take into account a child's age and sex, for each subject. Parents who did not return the materials within two weeks of the return date received a follow-up phone contact inviting their return of the materials.

51 completed answer sheets were returned, 30 from the comparison group (17 females and 13 males ranging in age from 9 to 12 years) and 21 children (17 males and 4 females) from the delayed reading sample. The delayed reading group ranged in age from 10 to 14 years. They showed delays of one to four years in instructional reading levels as measured by the Standard Reading Inventory (McCracken, 1963). This instrument is an individually administered reading test for measuring reading achievement at pre-primer through seventh reader levels. Seven of the 21 subjects were three or more grade levels behind the expected reading level for their chronological age at the time of assessment.

Instrumentation

The revised format (PIC) Personality Inventory for Children administration booklet (1977, 1981) parts I, II, III and IV was completed for each subject by his or her mother. The PIC was designed to provide a useful diagnostic instrument that would also be a practical measure of psychological characteristics among children.

The PIC is a 600 item inventory constructed by empirical and rational methods. It aims to describe current broad and narrow patterns of behavior in children aged three through 16 on the basis of a parent's response to true and false questions. The inventory provides summary scores on validity, cognitive, clinical and factor scales.

Administration of the test requires minimal participation by the clinician. Brief instructions to the

parent describing the correct place to mark answers and encouraging that all questions be answered are provided on the cover of the inventory booklet.

The inventory is divided into 12 clinical scales, namely: Achievement (ACH), Intellectual Screening (IS), Development (DVL), Somantic Concern (SOM), Depression (D), Family Relations (FAM), Delinquency (DLQ), Withdrawal (WDL), Anxiety (ANX), Psychosis (PSY), Hyperactivity (HPR), and Social Skills (SSM). Validity scales F, Defensiveness (DEF), and Lie (L) assess the respondent's tendency to underreport or exaggerate child behavioral symptoms or to respond randomly. The factor scales assess broad dimensions of child psychopathology including externalizing behavior (Factor I), internalizing behavior (Factor II), social incompetence (Factor III), and cognitive dysfunction (Factor IV).

Hypotheses

Based on the literature reviewed, and in order to answer the questions posed in this study the following hypotheses were generated.

Hypothesis #1

There will be a significant difference in the PIC profiles of subjects experiencing reading difficulties as compared to children who are reading at or above grade level.

Hypothesis #2

The most significant differences in PIC profiles

between the two groups will occur on the three scales, Achievement (ACH), Intellectual Screens (IS), and Development (DVL), which make up the cognitive triad of the test.

Hypothesis #3

Students with reading difficulties will demonstrate more social and emotional problems than children reading at or above grade level as measured by PIC scales which reflect narrow band personality functioning (SOM, D, FAM, DLQ, WDL, ANX, PSY, HPR, SSK).

Hypothesis #4

There will be no significant difference between the PIC standard score norms provided by the authors and the T-scores of subjects in the comparison group, suggesting that existing norms are in line with the present sample.

Hypothesis #5

Significantly more children in the delayed reading group (children with reading problems) as compared to children reading at or above grade level will score above a T-score of 60, or one standard deviation above the mean, on the PIC adjustment scale indicating a need for further psychological assessment.

Hypothesis #6

Significantly more children in the delayed reading group as compared to children reading at or above grade level will score above a T-score of 60, or one standard deviation above the mean, on the PIC Factor IV: Cognitive

Development.

Data Analysis

Hotelling T^2 tests were performed on raw scores and standard T-scores where age and sex of children have been taken into account, across the 20 PIC scales. Individual F-tests using multivariate degrees of freedom were used on individual scales. Descriptive statistics for each group and scale were generated. A further Hotelling T^2 or MANOVA was used on the nine clinical scales which reflect social and emotional problems. A MANCOVA was also used across the clinical scales to factor out variance accounted for by the cognitive factor. The Chi-square statistic was used to test proportions of subjects showing elevated scores across the 20 PIC scales. Descriptive analysis of the number of subjects and percentage of the total group scoring within certain T-score ranges was carried out on all 20 PIC scales. The T-scores of subjects on the Adjustment and Factor IV scales were inspected so as to answer certain questions, as were the mean scale T-scores for the comparison group.

CHAPTER IV

Results

In this chapter results of the data analysis described above will be presented as they relate to the questions posed in this study.

Hypothesis #1

In order to determine whether or not there was a significant difference in the PIC profiles of children with reading problems as compared to students reading at or above grade level a Hotelling T^2-test was performed. The test was conducted first on raw scores and secondly on standard T-scores where the conversion takes age and sex into consideration.

The Hotelling T^2-test performed on raw scores yielded a $T^2 = 190.483$ with an F-ratio = 5.83 and a probability <0.0001. (see table 1).

The same test performed on T-scores yielded a $T^2 = 265.761$ with an F-ratio = 8.14 and a probability <0.0001. (see table 2).

The PIC profiles of delayed reading and comparison groups do show a statistically significant difference. Hypothesis #1 that a significant difference in the PIC profiles of children with reading difficulties as compared to the "normal" subjects was supported.

Hypothesis #2

In order to see which individual PIC scale scores differed significantly between the two groups F-tests for

TABLE 1

Means and Standard Deviations for Raw Scores on Each PIC Scale for Delayed Reading and Comparison Groups with Individual Scale F-test Results

PIC Scale	Delayed Reading Group mean	Delayed Reading Group standard deviation	Comparison Group mean	Comparison Group standard deviation	F	P
Factor I - Externalizing Behavior	8.57	7.91	3.63	2.98	0.286	0.998
Factor II - Internalizing Behavior	9.00	5.24	5.43	4.30	0.208	1.000
Factor III - Social Incompetence	5.05	2.83	3.97	3.83	0.035	1.000
Factor IV - Cognitive Development	6.05	2.47	2.57	1.94	0.927	0.562
Infrequent Responses - F	3.86	1.78	2.83	2.03	0.102	1.000
Defensiveness - DEF	9.95	1.86	10.63	1.14	0.077	1.000
Adjustment - ADJ	34.24	5.98	23.43	4.10	1.723	0.086
Achievement - ACH	17.62	3.12	8.97	3.21	2.699	0.007*
Intellectual Screening - IS	16.80	3.84	12.50	1.23	0.970	0.518
Development - DVL	10.90	2.39	4.70	2.70	2.110	0.031*
Somatic Concern - SOM	4.71	2.86	5.17	3.05	0.008	1.000
Depression - D	11.90	6.61	7.57	5.51	0.191	1.000
Family Relations - FAM	8.95	6.47	4.57	3.02	0.309	0.996
Delinquency - DLQ	15.38	5.29	11.57	1.59	0.407	0.980
Withdrawal - WDL	5.43	2.38	4.43	2.51	0.059	1.000
Anxiety - ANX	8.38	4.18	7.20	3.79	0.032	1.000
Psychosis - PSY	5.10	3.28	3.70	2.69	0.082	1.000
Hyperactivity - HPR	17.57	3.11	15.60	2.46	0.187	1.000
Social Skills - SSK	12.81	6.90	3.40	4.65	0.219	1.000
Lie - L	4.86	2.39	5.83	2.18	0.054	1.000

Hotelling T^2 = 190.483 F-Ratio = 5.831 $P < 0.001$
df1 = 20 df2 = 30
* statistically significant differences between the two groups
- note the large within group variance

TABLE 2

Means and Standard Deviations for T-Scores on Each PIC Scale for Delayed Reading and Comparison Groups with Individual Scale F-Test Results

PIC Scale		Delayed Reading Group mean	Delayed Reading Group standard deviation	Comparison Group mean	Comparison Group standard deviation	F	P
Factor I		58.33	16.41	49.07	7.30	0.219	1.000
Factor II		58.29	12.40	50.13	10.19	0.194	1.000
Factor III		61.95	23.69	52.33	12.52	0.104	1.000
Factor IV		61.11	12.73	51.23	9.59	0.817	0.677
Infrequent Responses	- F	53.18	7.62	49.30	8.44	0.096	1.000
Defensiveness	- DEF	43.62	10.47	47.50	7.62	0.069	1.000
Adjustment	- ADJ	69.81	12.01	49.23	7.25	1.703	0.091
Achievement	- ACH	68.52	8.27	46.70	7.94	2.652	0.008*
Intellectual Screening	- IS	77.71	16.38	49.63	7.30	2.021	0.039*
Development	- DVL	65.81	7.62	46.60	8.53	2.010	0.041*
Somatic Concern	- SOM	48.91	7.65	50.60	9.63	0.013	1.000
Depression	- D	59.29	13.05	50.20	10.39	0.224	1.000
Family Relations	- FAM	54.68	12.80	46.30	5.76	0.292	0.997
Delinquency	- DLQ	59.91	16.60	48.90	5.74	0.331	0.994
Withdrawal	- WDL	55.48	8.72	52.37	9.41	0.042	1.000
Anxiety	- ANX	57.76	12.85	52.47	9.83	0.082	1.000
Psychosis	- PSY	57.91	12.36	53.03	10.25	0.069	1.000
Hyperactivity	- HPR	57.00	11.67	52.20	10.12	0.072	1.000
Social Skills	- SSK	59.33	14.73	50.37	9.95	0.198	1.000
Lie	- L	48.29	11.59	52.17	8.21	0.058	1.000

Hotelling T^2 = 265.761 F-Ratio = 8.136 $p < 0.001$
df1 = 20 df2 = 30

* statistically significant differences between the two groups
- note the large within group variance

each of the scales with multivariate degrees of freedom were conducted first on raw scores and secondly with standard scores.

On the raw scores two scales were found to differ significantly, namely, Achievement (ACH) and Development (DVL) (See table 1). When T-scores were tested, three PIC scales differed significantly between the two groups - Achievement (ACH), Intellectual Screening (IS) and Development (DVL) (see table 2).

Mothers' perceptions of academic achievement, intellectual functioning and overall development in their children differed most between the two groups. It would seem that standard scores, where sex and age have been taken into account, on the PIC cognitive triad - ACH, IS, and DVL show the most significant differences between the two groups. Hypothesis #2 was supported.

Hypothesis #3

In order to test whether or not the PIC profiles of children with reading problems differ from the comparison group on clinical scales reflecting narrow band social and emotional problems a Hotelling T^2-test was conducted on the following nine scales - SOM, D, FAM, DLQ, WDL, ANX, PSY, HPR and SSK first on raw scores and secondly on standard T-scores. The results yielded a $T^2 = 35.234$ with an F-ratio = 3.276 and a probability = 0.004 for raw scores; for standard scores $T^2 = 34.784$ with an F-ratio = 3.234 and a

probability = 0.005.

This indicates that when the information in these nine scales is pooled the two groups do differ statistically. When F-tests were conducted using multivariate degrees of freedom on each individual scale no statistically significant differences between the two groups were found. This failure to identify differences may have been because of the large within group variance, the rigorousness of the test, and the varied nature of social and emotional problems related to reading failure.

To look at individual scales in a more clinical way descriptive analysis of the number of subjects and percentage of the total group scoring within given T-score ranges was carried out for the 20 PIC scales (see table 3).

In order to explore possible individual scale differences further, the Chi-square statistic was used to test differences in the proportion of subjects in each group scoring above a T-score of 60 on each scale. This T-score represents a scale elevation of one standard deviation above the norm. Statistically significant differences between the number of subjects scoring above a T-score of 60 in each group were found on the following 1 scales: the four factor scales, the screening scale, Adjustment (ADJ), the cognitive triad, Achievement (ACH), Intellectual Screening (IS), and Development (DVL) and three of the clinical scales reflecting social and emotional problems, Family Relations

TABLE 3

Number of Subjects and Percentage of Group
Scoring Within Given T-Score Ranges for
Delayed Reading and Comparison Groups

PIC Scale	Delayed Reading Group			Comparison Group		
	T-scores below 60	T-scores 60 - 69	T-scores 70 and over	T-scores below 60	T-scores 60 - 69	T-scores 70 and over
Factor I	13 (61.9%)	2 (9.5%)	6 (28.6%)	26 (86.7%)	4 (13.3%)	0 (0.0%)
Factor II	11 (52.4%)	5 (23.8%)	5 (23.8%)	25 (83.3%)	1 (3.3%)	4 (13.3%)
Factor III	13 (61.9%)	6 (28.6%)	2 (9.5%)	25 (83.3%)	3 (10.0%)	2 (6.7%)
Factor IV	5 (23.8%)	7 (33.3%)	9 (42.9%)	23 (76.7%)	5 (16.7%)	1 (3.3%)
Infrequent Responses	16 (76.2%)	5 (23.8%)	0 (0.0%)	28 (93.3%)	0 (0.0%)	2 (6.7%)
Defensiveness	20 (95.2%)	1 (4.8%)	0 (0.0%)	28 (93.3%)	2 (6.7%)	0 (0.0%)
Adjustment	3 (14.3%)	10 (47.6%)	8 (38.1%)	27 (90.0%)	3 (10.0%)	0 (0.0%)
Achievement	4 (19.0%)	8 (38.1%)	9 (42.9%)	29 (96.7%)	1 (3.3%)	0 (0.0%)
Intellectual Screening	2 (9.5%)	3 (14.3%)	16 (76.2%)	25 (83.3%)	5 (16.7%)	0 (0.0%)
Development	5 (23.8%)	10 (47.6%)	6 (28.6%)	29 (96.7%)	1 (3.3%)	0 (0.0%)
Somatic Concern	18 (85.7%)	3 (14.3%)	0 (0.0%)	27 (90.0%)	1 (3.3%)	2 (6.7%)
Depression	15 (71.4%)	1 (4.8%)	5 (23.8%)	25 (83.3%)	3 (10.0%)	2 (6.7%)
Family Relations	16 (76.2%)	3 (14.3%)	2 (9.5%)	30 (100.0%)	0 (0.0%)	0 (0.0%)
Delinquency	14 (66.7%)	2 (9.5%)	5 (23.8%)	29 (96.1%)	1 (3.3%)	0 (0.0%)
Withdrawal	14 (66.7%)	5 (23.8%)	2 (9.5%)	26 (86.7%)	2 (6.7%)	2 (6.7%)
Anxiety	12 (57.1%)	4 (19.0%)	5 (23.8%)	24 (80.0%)	4 (13.3%)	2 (6.7%)
Psychosis	12 (57.1%)	5 (23.8%)	4 (19.0%)	22 (73.3%)	6 (20.0%)	2 (6.7%)
Hyperactivity	13 (61.9%)	4 (19.0%)	4 (19.0%)	24 (80.0%)	4 (13.3%)	2 (6.7%)
Social Skills	13 (61.9%)	3 (14.3%)	5 (23.8%)	26 (86.7%)	1 (3.3%)	3 (10.0%)
Lie	17 (81.0%)	3 (14.3%)	1 (4.8%)	22 (73.3%)	8 (26.7%)	0 (0.0%)

(FAM), Delinquency (DLQ) and Social Skills (SSK) (see table 4).

These findings again suggest that differences on personality variables as measured by the PIC do exist between the two groups not only on variables measuring cognitive development, but also on scales reflecting social and emotional problems.

The Chi-squares on individual scales indicated that significantly more children in the delayed reading group obtained a T-score of over 60 on three of the nine scales presently under investigation, Family Relations (FAM), Delinquency (DLQ), and Social Skills (SSK) (see table 4). Again we have support for the notion that social and emotional problems are more prevelent in children who experience reading failure.

A further investigation of profile differences between groups used a MANCOVA to factor out the variance accounted for by the cognitive triad, namely Achievement (ACH), Intellectual Screening (IS) and Development (DVL). The test yielded an F-ratio of 1.4413 with a probability of 0.18566. When this factor is removed the between group differences which remain are statistically insignificant.

This suggests that differences between the two groups on personality variables are related to the cognitive triad factor and possibly therefore to whether or not a subject is in the delayed reading group. Hypothesis #3 was supported.

TABLE 4

One-tailed t-tests and Chi-Squares

Comparing Mean PIC scale T-scores of
Delayed Reading and Comparison Groups

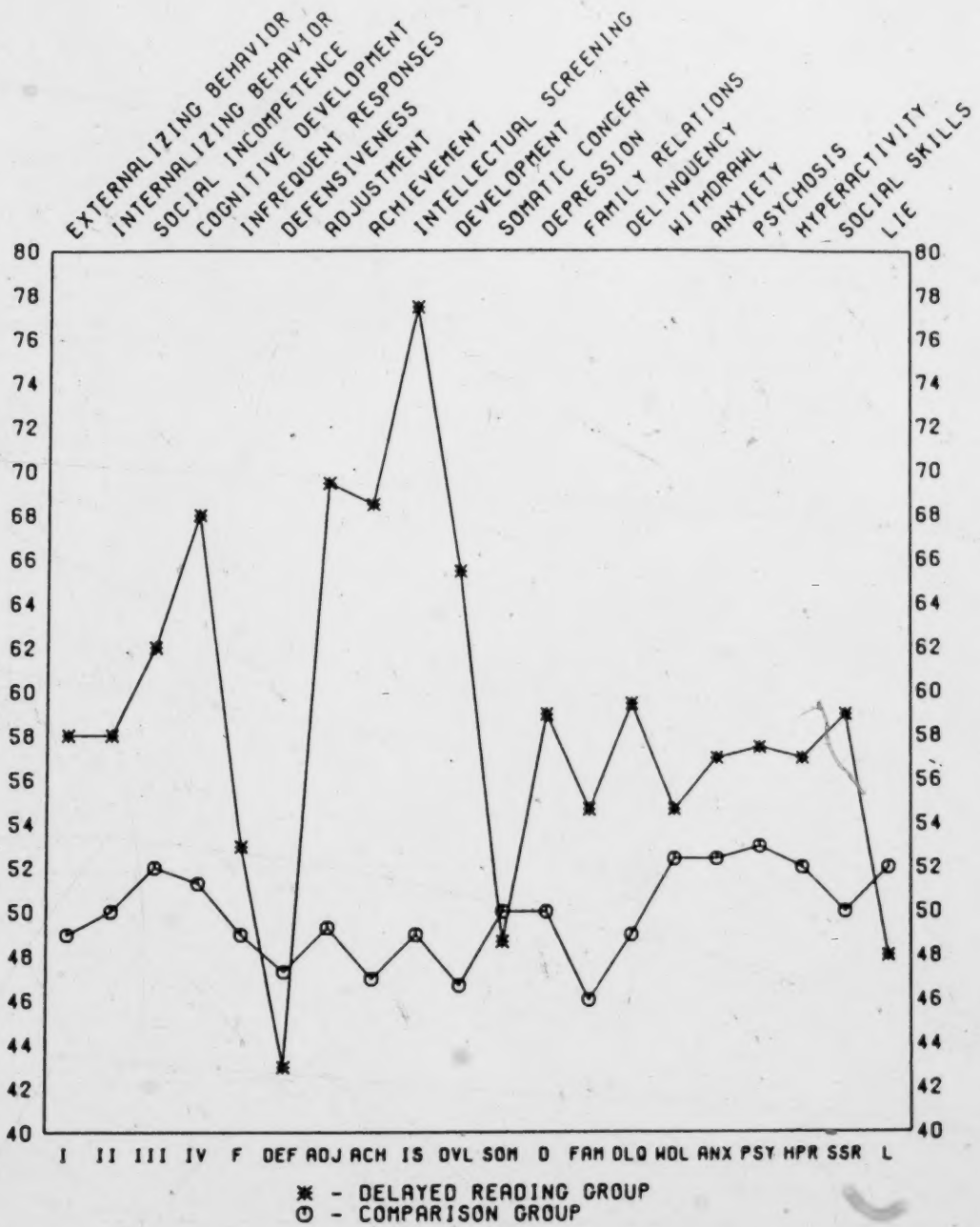
PIC Scale	phi	p
Factor I	4.210	0.040 *
Factor II	5.700	0.017 *
Factor III	4.255	0.039 *
Factor IV	13.939	<0.001 *
Infrequent Responses	3.066	0.080
Defensiveness	0.081	0.776
Adjustment	29.237	<0.001 *
Achievement	32.588	<0.001 *
Intellectual Screening	27.012	<0.001 *
Development	29.507	<0.001 *
Somatic Concern	0.219	0.640
Depression	2.987	0.084
Family Relations	7.719	0.005 *
Delinquency	8.406	0.004 *
Withdrawal	2.921	0.087
Anxiety	2.987	0.084
Psychosis	1.457	0.027
Hyperactivity	1.297	0.255
Social Skills	4.210	0.040 *
Lie	0.399	0.528

df = 49

* statistically significant differences between the two groups

GRAPH 1

Comparison of Standard T-scores on 20 PIC Scales
Between the Delayed Reading and Comparison Groups



Hypothesis #4

The existing PIC norms were collected between 1958 and 1962 in the Minneapolis - St. Paul area. Reviewers have suggested that updating of these tables is necessary. Therefore in order to determine whether or not the PIC standard score norms provided by the authors were in keeping with mean T-scores of the comparison group each T-score was examined. Each scale mean was found to fall between T-scores of 45 and 55 or within one standard error of measurement (see graph 1). This would indicate that the norms provided by the authors are within the same range as scores of the comparison group children participating in this study here in Alberta. Hypothesis #4 was supported.

Hypothesis #5

The Chi-square statistic described earlier demonstrated that significantly more children in the delayed reading group as compared to children reading at or above grade level scored above a T-score of 60 on the PIC Adjustment scale, phi = 29.237 with $p < 0.001$.

Descriptive analysis of the number of subjects and percentage of the total group scoring within given T-score ranges on the Adjustment scale was also examined. Eight of the 21 children or 38.1 percent scored at or above two standard deviations above the mean. Ten children or 47.6 percent scored in the T-score range between 60 and 69 (see table 3).

18 of the 21 children in the delayed reading group or 86 percent scored above a T-score of 60. Only three of the 30 children or 10 percent of the comparison group scored above this level. It would seem that the Adjustment scale is functioning as a screen for high risk children. Interestingly the three children who were part of the study group and not screened by this scale all had an instructional reading level delay of only 1 year (see graph 2). Hypothesis #5 that significantly more children in the delayed reading group as compared to "normal" children would score above a T-score of 60 on the Adjustment scale was supported.

Hypothesis #6

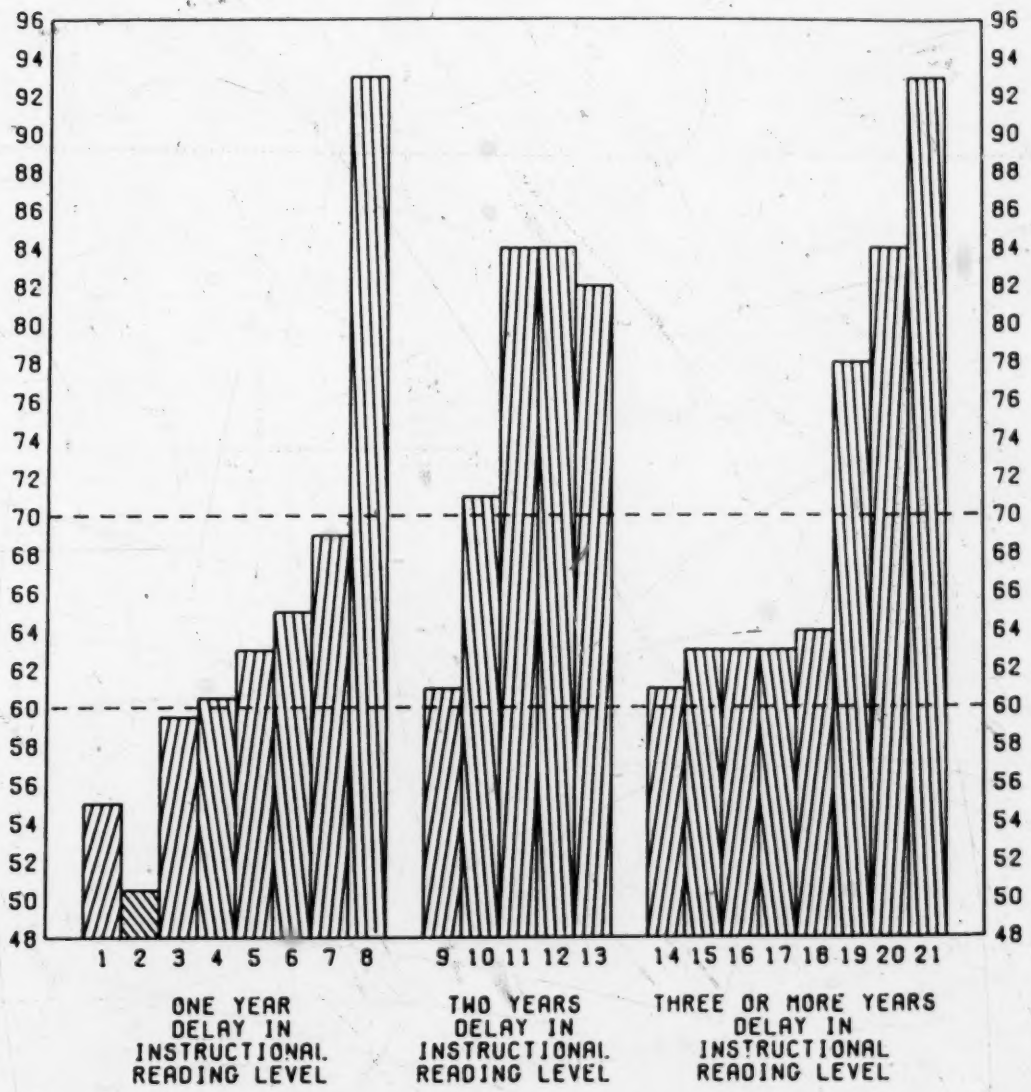
T-scores on the fourth factor scale, Cognitive Development, were examined in order to determine how many children in each group would obtain scale elevations above 60 and 70. In the study group 16 out of 21 or 76 percent of the children obtained T-scores above 60. Nine of these 16 or 43 percent scored above 70 or two standard deviations above the norm. In the comparison group six of the 30 subjects or 20 percent showed scale elevations of above 60. One of the children or 3.34 percent of the group obtained a T-score of above 70 (see table 3).

Results of the Chi-square, testing whether or not proportions of subjects scoring one or more standard deviations above the mean differed between the two groups,

showed a statistically significant figure on this scale, phi = 13.939 with a $p < 0.001$ (see table 4). Hypothesis #6 that significantly more children in the delayed reading group as compared to children reading at or above grade level will score above a T-score of 60 on the PIC Factor IV, Cognitive Development was supported.

GRAPH 2

Bar Graph Showing
T-scores on Adjustment Scale
for the Delayed Reading Group



Delayed Reading Subjects

CHAPTER V

Conclusions and Discussion

This study was conducted comparing the Personality Inventory for Children PIC profiles of children in grades four through six experiencing reading difficulties with a matched comparison group of children reading at or above expected grade level. The purpose of this research was to determine if significant differences existed between the two groups and if so on which individual scales. The researcher was also interested in knowing whether or not the PIC norms provided in the manual were in keeping with the comparison group of "normal" subjects. The ability of the Adjustment scale (ADJ) to screen for children in need of further psychological assessment was under investigation as was the capacity of the fourth factor scale, Cognitive Development to identify high risk children who are having reading problems.

Major Conclusions

Based on the results of this research a number of conclusions can be drawn:

1. A significant difference does exist between the PIC profiles of children experiencing reading difficulties and a matched comparison group of children reading at or above expected grade level.

2. The groups differed most on those narrow band scales reflecting mothers' perceptions of academic achievement, and intellectual and general development (ACH),

(IS), (DVL), however differences in varying degrees of significance were seen across all of the broad band factor scales, Externalizing Behaviour, Internalizing Behaviour, Social Incompetence and Cognitive Development, one validity scale, Infrequent Responses (F), and three of the narrow band clinical scales, Family Relations (FAM), Delinquency (DLQ) and Social Skills (SSK).

3. For the "normal" subjects participating as members of the comparison group in this study the norms provided in the PIC manual were in the same range. All mean scale T-scores for the comparison group fell between 45 and 55 or within one standard error of measurement suggesting no significant differences between these scores and existing norms.

4. For the screening scale Adjustment (ADJ) and the fourth broad band factor scale Cognitive Development, which can also be used to screen for areas of concern, a clinical cut off point of T-score 60 or one standard devition above the mean would seem to provide screening for high risk children in need of further investigation within this population.

5. The Personality Inventory for Children PIC does appear to meet the purpose of a personaltiy test - which is to classify, predict and better understand the behavior of subjects. Since this aim is achieved, PIC results should then assist us in understanding the child better and thus in planning appropriate interventions for students.

Discussion

The present study shows results in keeping with the validity studies reviewed earlier. The PIC cognitive triad has been seen to consistantly discriminate different special education criterion groups and appears to be a suitable assessment tool for use in the school setting. This was evidenced in the research of Clark (1982), DeKrey (1982), Culbert and Gdowski (1982) and the present study.

Unlike Culbert and Gdowski (1982) who removed from their research any children who may have had emotional disturbance associated with a diagnosed reading problem, this study attempted to examine any social and emotional problems which might be present. Support was found for the hypothesis that children with reading difficulties would demonstrate more social difficulties than "normal" children or children who had not experienced academic failure. The presence of significantly more elevated PIC profiles with the delayed reading group suggests that the social and emotional health of this population is at risk.

As would have been predicted by Porter's work (1980) the delayed reading group was found to represent a heterogeneous population. The large within group variance reported reflected the individual nature of subjects and their personality characteristics. One child may be withdrawn while another is acting out. A child may be socially incompetent or suffering family relations problems. Because human beings are complicated these personality characteris-

tics interact with each other in a multitude of unique combinations. The need then to understand a child's particular personality characteristics has been proponed as necessary when planning for successful remediation programs. (Williamson, 1979; Murray, 1978).

Suggestion for Further Research

The availability of a good tool for personality assessment does not lead directly to better rememdiation programs and therefore methods of utilizing PIC profile results so as to assist with student programming need to be developed and studied within the school setting. Also, since the PIC appears to be a valid inventory of personality functioning in children, study of its further utility as a tool for assessing intervention programs would seem important.

Although for subjects in this study the PIC norms provided were found to be in line with current responses more research with different populations reflecting a wide variety of geographic areas, socio-economic status and minority populations would seem advisable since original norms are now 20 to 24 years old and were constructed using a sample primarily from one geographical area.

The effects of utilizing available computerized administration, scoring and interpretation of the PIC should be investigated. The advantages of quick accurate scoring and interpretation to both clinician and clients are desirable and therefore this method of test taking may be

expected to gain rapid popularity.

Further research into using the PIC in the school setting with children who do not demonstrate cognitive or academic problems would be advisable. Emotional distress and social problems are not limited to children who fail academically.

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APPENDIX A

Scales of the Revised Format PIC

Scales of the Revised Format PIC

Factor Scales

I: Undisciplined / Poor Self-Control
II: Social Incompetence
III: Internalization / Somatic Symptoms
IV: Cognitive Development

Validity and Screening Scales

Lie (L)
Frequency (F)
Defensiveness (DEF)
Adjustment (ADJ)

Clinical Scales

Achievement (ACH)
Intellectual Screen (IS)
Development (DVL)
Somatic Concern (SOM)
Depression (D)
Family Relations (FAM)
Delinquency (DLQ)
Withdrawl (WDL)
Anxiety (ANX)
Psychosis (PSY)
Hyperactivity (HPR)
Social Skills (SSK)

Experimental Scales

Adolscent Maladjustment (AGM)
Aggression (AGN)
Asocial Behaviour (ASO)
Cerebral Dysfunction (CDY)
Delinquency Prediction (DP)
Ego Strength (ES)
Excitement (EXC)
Externalization (EXT)
Infrequency (INF)
Internalization (INT)
Introversion - Extraversion (I - E)
K (K)
Learning Disability Prediction (LDP)
Reality Distortion (RDS)
Sex Role (SR)
Social Desirability (SD)
Somatization (SM)

APPENDIX B

Invitation to Participate in the Study

UNIVERSITY OF ALBERTA
Faculty of Education
Department of Educational Psychology

6-123F Education Building North
University of Alberta
Edmonton, Alberta T6G 2G5

March 10, 1986

Mrs. Marilyn Forster
9232 - 177 Street
Edmonton, Alberta
T5T 3M5

Dear Mrs. Forster:

In order to clarify the needs of children who use reading specialists, a study is being conducted. We hope to gain understanding with a view towards enhancing future educational programs. The Researcher, a graduate student, has been given permission to contact County of Parkland parents who might be interested in participating.

Parents can provide a valuable source of information concerning their children.

Mrs. Forster, your name has been selected by either because your child Noah has used these services over the past year or because you were randomly chosen to participate as part of a control group. The control group will provide a comparison for the results gathered from the parents of the children being studied.

The selection of names did not require the reading of any Student Services files by the Researcher.

Should you wish to assist in this venture, the enclosed questionaire will take about one hour of your time. Participation is strictly on a voluntary basis and all responses are kept confidential.

If any information of particular concern to Noah or yourself arises from the inventory respones, you will be contacted and further interpretation given.

Any question or concerns about the study may be directed to Marilyn Forster at 481-2650.

To participate in this study, simply respond to the questions listed as they relate to Noah. Then return all materials by placing them in the self-addressed stamped envelope provided and mailing before March 24, 1986.

If you do not wish to particpate, I would appreciate you returning the closed materials in the envelope provided.

Thank you in advance for your time and concern.

Sincerely,

Marilyn Forster, B.A., B.Ed.
Researcher